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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/848,520	05/03/2001	Eric Christopher Berg	8070LS&M	7535

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EXAMINER

FERRIS III, FRED O

ART UNIT	PAPER NUMBER
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2128

DATE MAILED: 06/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/848,520	Applicant(s) BERG ET AL.	
	Examiner Fred Ferris	Art Unit 2128	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 May 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 January 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>05/23/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1-22 have been presented for examination based on applicant's amendment filed 28 February 2005. Applicants have now cancelled claim 4. Claims 1-3 and 5-22 are now pending and remain rejected by the examiner.

Response to Arguments

2. Applicant's arguments filed 28 February 2005 have been fully considered.

Regarding applicant's response to 101 rejections: The examiner concurs with applicant's arguments that computer programs that are embodied in a tangible medium are in fact statutory. However, the claims at issue, i.e. claims 18, 20, and 21, do not specifically recite a computer program product with an embodiment on a tangible medium. Claim 17 was not rejected under 101 because it recites a computerized simulation and not a program product. The examiner therefor maintains the 35 USC 101 rejection of claims 18, 20, and 21.

Regarding applicant's response to 112(2) rejections: The examiner withdraws the 112(2) rejection in view of applicant's amendment to the claims and supporting arguments submitted 28 February 2005.

Regarding applicant's response to 102(a) rejections: Applicants argue that BlockSim 1.0 does not teach the elements relating to downtime distribution, zero uptime, and cumulative cause failure modes, as now recited in the amended claims. The examiner asserts that the BlockSim 1.0 program discloses analyzing a system where each defined block represents a component, assembly, or failure mode with

multiple properties (i.e. parameters, see: bottom page 1) and further provides the capability to compute the uptime or downtime for each block (see: top page 2, middle page 4). Therefore the amended limitations relating to analyzing a first system to determine failure modes and calculating the uptime for each failure mode remain anticipated by BlockSim 1.0. Further, since BlockSim clearly calculates the uptime and downtime for each defined block (i.e. a block can be a failure mode), then obviously calculating a zero uptime within each block would be inherent in the BlockSim capabilities. Also, calculating the cumulative failure modes is interpreted to simply mean calculating the total system failure modes which would also fall within the inherent capabilities of BlockSim 1.0 since BlockSim calculations are carried out on all activated blocks. That is, the BlockSim analysis can be applied to all of the defined system blocks where blocks (components) can be individually activated or deactivated, see: page 1. BlockSim also provides failure distributions as noted on page 2. The examiner therefor maintains the 102(a) of claims 1-3 and 5-22.

Regarding applicants IDS submission: The information disclosure statement filed 28 February 2005 fails to comply with 37 CFR 1.98(a)(3) because it does not include a concise explanation of the relevance, as it is presently understood by the individual designated in 37 CFR 1.56(c) most knowledgeable about the content of the information, of each patent listed that is not in the English language. Further, no specific publications have been referenced. It has been placed in the application file, but the information referred to therein has not been considered.

Claim interpretation

3. Applicant's are claiming limitations relating to a simulation process for reliability and maintainability analysis of system failures based collected failure mode data representing a first system, and simulating the negative system effects by executing a reliability simulation on a second system. The examiner first notes that such features are generally inherently available in commercially available reliability and maintainability simulators such as AvSim+, RAPTOR, RAM Commander, and BlockSim. (See: "Comparison of Reliability-Availability Mission Simulators", R. Willis) Further, any reliability simulator that uses known (collected) failure data as part of the simulation model, meets the requirements for collecting a first system failure mode data and executing a computer program simulating a second system as recited in claim 1. That is, the second system, namely the platform running the reliability simulator, is executing a simulation model that is based on the failure mode data collected from a first system. It is further noted that applicant's specification indicates that a "loss event" is merely any event which negatively affects the modeled system or component (page 4, line 5), and that the claimed "false start event" is merely a loss event that occurs quickly relative to the expected life of the system (page 5, line 3). Hence, any reliability simulator that models negative system effects over time, and the expected system life (i.e. MTBF), would inherently meet these limitations by simply modeling negative system effects as discrete events which occur in a short (quick) time relative to the MTBF (expected life). (see 102(a) rejection, BlockSim 1.0, below)

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

4. Claims 18, 20, and 21 are rejected under 35 U.S.C. 101 because the claimed invention is drawn to non-statutory subject matter. The Examiner submits that claims 18, 20, and 21 are not tangible because Applicant's have not recited any limitations that define the signal-bearing medium.

An invention which is eligible for patenting under 35 U.S.C. § 101 is in the "useful arts" when it is a machine, manufacture, process or composition of matter, which produces a concrete, **tangible**, and useful result. The fundamental test for patent eligibility is thus to determine whether the claimed invention produces a "**useful, concrete and tangible result.**" The test for practical application as applied by the examiner involves the determination of the following factors:

(1) "Useful" - The Supreme Court in *Diamond v. Diehr* requires that the examiner look at the claimed invention as a whole and compare any asserted utility with the claimed invention to determine whether the asserted utility is accomplished.

(2) "**Tangible**" - Applying *In re Warmerdam*, 33 F.3d 1354, 31 USPQ2d 1754 (Fed. Cir. 1994), the examiner will determine whether there is simply a mathematical construct claimed, such as a disembodied data structure and method of making it. If so, the claim involves no more than a manipulation of an abstract idea and therefore, is nonstatutory under 35 U.S.C. § 101. In *Warmerdam* the abstract idea of a data

structure became capable of producing a useful result when it was fixed in a tangible medium which enabled its functionality to be realized.

(3) "Concrete" - Another consideration is whether the invention produces a "concrete" result. Usually, this question arises when a result cannot be assured. An appropriate rejection under 35 U.S.C. § 101 should be accompanied by a lack of enablement rejection, because the invention cannot operate as intended without undue experimentation.

The Examiner therefore respectfully submits, under current PTO practice, that the claimed invention does not recite tangible result because the claimed signal-bearing medium recited in claim 18 is undefined. Dependent claims 20 and 21 inherit this defect as being dependent from claim 18.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. Claim 1-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over “A Quick Overview of ReliSoft’s BlockSim”, Product Description BlockSim 1.0, ReliaSoft Corp. Jan. 2000 in view of U.S. Patent 6,334,095 issued to Smith.

Independent claim 1, for example, is drawn to:

A simulation process, comprising the following steps:

- *collecting first system failure modes data*
- *analyzing to determine failure modes calculating failure mode for each failure.*
- *parameterizing data for computer program simulating second system*
- *executing computer program simulating second system, where executing step comprises determining whether second system will encounter a first false start event based upon data collected from first system.*

Regarding independent claim 1: BlockSim 1.0 is a commercially available Reliability and Maintainability simulator capable of performing a complete system analysis using reliability block diagrams (RBD's) for system definition and performs complex system analysis both analytically and through discrete event simulation. BlockSim 1.0 teaches the elements of the claimed limitations of the present invention as follows:

- collecting first system failure modes data: BlockSim 1.0 allows the user to model the RBD's based on failure mode data collected from field data, vendor data, or performance analysis. (see pages 1, 2, 5)
- analyzing to determine failure modes calculating failure mode for each failure mode: BlockSim teaches analyzing a system where each defined block represents a component, assembly, or failure mode with multiple properties (i.e.

parameters, see: bottom page 1). BlockSim further provides the capability to compute the uptime or downtime for each block (see: top page 2)

- parameterizing data for computer program simulating second system: BlockSim 1.0

provides a GUI based user input for inputting failure mode and system data parameters (parameterized) into the reliability simulator program (i.e. second system). (see page 2)

- executing computer program simulating second system, where

executing step comprises determining whether second system will

encounter a first false start event based upon data collected from first

system: The examiner first notes that, as recited above, any reliability simulator that

uses known (collected) failure data as part of the simulation model, meets the

requirements for collecting a first system failure mode data and executing a computer

program simulating a second system as recited in claim 1. That is, the second system,

namely the platform running the reliability simulator, is executing a simulation model that

is based on the failure mode data collected from a first system. BlockSim 1.0 clearly

teaches this limitation because the reliability block diagrams (RBD's) used by BlockSim

can represent the failure mode of a component, subassembly, or assembly with multiple

properties that can be collected from field data, vendor data, or performance analysis.

(see pages 1, 2, 5) It is also noted that applicant's specification merely defines a "loss

event" as any event that negatively affects the modeled system or component (page 4,

line 5), and a "false start event" as a loss event that is quick relative to the expected life

of the system (page 5, line 3). BlockSim 1.0 also clearly teaches these limitations since

negative effects on the components and system (represented by RBD's) are modeled

as discrete events that include failure and repair distribution (Weibull, mixed, lognormal, normal, exponential, downtime, uptime, mean availability, expected failures, point availability, etc.) for series, parallel, complex and K out of N configurations. (see pages 2, 3) Therefore, determining a "false start event" is inherent BlockSim since the negative effects (loss events) on the RBD's can be represented (modeled) as being short (quick) relative to the expected life (MTBF) of the system.

Per dependent claim 2: BlockSim 1.0 models first system failure mode data on a second (same) system as noted above.

Per dependent claim 3: BlockSim 1.0 models any type or repairable mechanical (i.e. manufacturing) system. (pages 4, 5)

Per dependent claim 5: BlockSim 1.0 calculates the uptime for failure modes. (page 2)

Per dependent claim 6: Determining which failure mode causes a loss event would be inherent in BlockSim 1.0 since the RBD's model both the failure mode and loss events. (see: pages 1-3)

Per dependent claim 7: BlockSim 1.0 calculates the downtime for failure modes. (page 2).

Per dependent claim 8: BlockSim 1.0 provides multiple distributions for failure modeling including Weibull, exponential, normal, lognormal, etc. (see page 2)

Per dependent claim 9: BlockSim 1.0 provides multiple (cumulative) failure properties for failure modes. (page 1)

Per dependent claims 10 and 11: Calculating cumulative and competing failure modes and determining related loss event causes would be inherent in BlockSim 1.0 since the RBD's model multiple failure modes, loss event properties, and the uptime/downtime of failure modes. (see: pages 1-3)

Per dependent claim 12: BlockSim 1.0 calculates the RBD's model for multiple failure modes, loss event properties, and the uptime/downtime of failure modes. (see: pages 1-3) Therefore, determining a second "false start event" is also inherent BlockSim since the negative effects (loss events) on the RBD's can be represented (modeled) relative to the downtime for a second loss event. BlockSim 1.0 provides multiple (cumulative) failure properties for failure modes. (page 1)

Per dependent claim 13-15: BlockSim 1.0 calculates (outputs) the system reliability and availability (pages 1, 3, 4).

Per dependent claim 16: BlockSim 1.0 provides facilities for modifying the system RBD parameters as result of optimization (page 3) and analysis (page 4) processes.

Per independent claim 17: As previously cited above, BlockSim 1.0 clearly teaches receiving values for multiple data parameters relating to failure mode and negative effects on the components and system (represented by RBD's) for a first and second system. These parameters are used to model discrete events that include failure and repair distribution (Weibull, mixed, lognormal, normal, exponential, downtime, uptime, mean availability, expected failures, point availability, etc.) for series, parallel, complex and K out of N configurations. (see pages 2, 3) Therefore, determining a "false start event" is inherent BlockSim since the negative effects (loss events) on the

RBD's can be represented (modeled) as being short (quick) relative to the expected life (MTBF) of the system.

Per dependent claims 18-22: This group of claims merely claims the computer program product with machine readable instructions for carrying out the reliability simulation limitations of claim 17. BlockSim 1.0 is a commercially available software product, which operates on a commercially available PC or workstation platform, that is provided embodied on magnetic or optical medium, or via a computer network via the internet. (see page 6)

Conclusion

6. *Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).*

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Careful consideration should be given prior to applicant's response to this Office Action.

"Field Data is Reliability Information: Implementing an Automated Data Acquisition and Analysis System", J. Jauw et al, Proceedings IEEE Annual Reliability and Maintainability Symposium, Jan. 2000 teaches reliability and maintainability simulators.

"A Quick Overview of ReliaSoft's BlockSim", Product Description BlockSim 1.0, ReliaSoft Corp. Jan. 2000 teaches reliability and maintainability simulators.

"Comparison of Reliability-Availability Mission Simulators", R. Willis, Society of Reliability Engineers, 2002 teaches reliability and maintainability simulators.

"Modeling & Analysis for Multiple Stress-Type Accelerated Life Data", A. Mettas, Proceedings IEEE Annual Reliability and Maintainability Symposium, Jan. 2000 teaches reliability and maintainability simulators.


"Reliability Allocation and Optimization for Complex Systems", A. Mettas, Proceedings IEEE Annual Reliability and Maintainability Symposium, Jan. 2000 teaches reliability and maintainability simulators.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fred Ferris whose telephone number is 571-272-3778 and whose normal working hours are 8:30am to 5:00pm Monday to Friday. Any inquiry of a general nature relating to the status of this application should be directed to the group receptionist whose telephone number is 571-272-3700. If attempts to reach the

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examiner by telephone are unsuccessful, the examiner's supervisor, Jean Homere can be reached at 571-272-3780. The Official Fax Number is: (703) 872-9306

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